

NOTICE

All drawings located at the end of the document.

**Industrial Area
Sampling and Analysis Plan
Addendum #IA-03-17
IHSS Group 700-5**

October 2003

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**Industrial Area
Sampling and Analysis Plan
Addendum #IA-03-17
IHSS Group 700-5**

Approval received from the Colorado Department of Public Health and Environment
().

Approval letter is contained in the Administrative Record.

October 2003

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ACRONYMS

DOE	U.S. Department of Energy
dpm	disintegrations per minute
FY	Fiscal Year
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
MDL	method detection limit
N/A	not applicable
OU	Operable Unit
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
PCOC	potential contaminant of concern
SAP	Sampling and Analysis Plan
UBC	Under Building Contamination
VOC	volatile organic compound

1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) Addendum #IA-03-17 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for the Building 770 Under Building Contamination (UBC) Site proposed for characterization during Fiscal Year (FY) 04. This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for IHSS Group 700-5 and the associated UBC 770 Site. The location of IHSS Group 700-5 is shown on Figure 1.

2.0 EXISTING UBC, IHSS, AND PAC INFORMATION

Existing concentrations and activities greater than background means plus two standard deviations, or method detection limits (MDLs), are presented on Figure 2. Existing information and data for this UBC Site are available in Appendix C of the IASAP (DOE 2001), the IA Data Summary Report (DOE 2000), the Historical Release Reports (HRRs) for the Rocky Flats Plant (DOE 1992-2002), and the Operable Unit (OU) 8 Data Summary Report (DOE 1995). PCOCs for this IHSS Group include radionuclides, metals, polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs).

Building 770 is a metal prefabricated modular building constructed in 1965 on a concrete foundation. The building is currently used to store tools, materials, and supplies for Building 771 decommissioning operations. Historically, Building 770 was used for equipment storage and also as a facility for equipment assembly prior to equipment installation inside other site buildings (DOE 1992). Building 770 was also used to store radioactive waste.

In August 1972, a punctured scrap box stored inside Building 770 contaminated approximately 3,600 square feet within the building and 500 square feet outside the building. Levels of radioactivity were measured up to 200,000 disintegrations per minute (dpm) (DOE 1992-2002). In September 1972, a 55-gallon drum containing spent ion exchange residue leaked onto the concrete floor inside Building 770 (DOE 1992-2002).

Drums with residue (for processing in Building 771) and cargo containers were stored on the surface area located west of Building 770 from 1969 to 1974 when storage operations were moved to Building 776 (DOE 1992). Several contamination releases occurred on the ground surface located west of Building 770 between 1965 and 1971 (DOE 1992-2002 [PAC 700-150.1], DOE 1992).

No characterization of soil beneath the Building 770 foundation slab has been conducted.

3.0 SAMPLING

The proposed sampling and analysis specifications for the UBC 770 Site are summarized in Table 1 and listed, by sampling location, in Table 2. The proposed sampling locations are shown on Figure 3.

Two types of sampling strategies are used to determine sampling locations: statistical, and biased. Statistical grids have computer-generated random start points and orientations. The standard statistical grid size (i.e., the length between grid points) is 36 feet; however, the grid size for UBC sites is 72 feet. The IASAP 72-foot grid for UBC sites was not used to determine sampling locations at UBC 770 because of the relatively small dimension of the 770 slab (60 feet long by 50 feet wide). A 36-foot grid size was used instead.

In addition to the three proposed statistical sampling locations, nine biased sampling locations are proposed (i.e., one under the 770 slab near the northeastern corner, one at the roof drain outfall located at the southeastern corner of the slab, one north of the slab, two along the eastern edge of the slab, and four along the drainage to Bowman's Pond located east of the slab). The biased sampling location under the slab was added to provide additional coverage under the slab. The samples from the eastern portion of the UBC and the samples east of the slab (west of PAC 700-1108) will be analyzed for PCBs to further investigate the PCBs previously detected (refer to Figure 2). Additional biased samples will be collected around floor drains, and process and foundation drains, if such drains are encountered during slab removal activities. Note: no foundation drains, sumps or process waste lines are known to be located beneath the 770 slab.

After characterization starts, the number and type of samples may change based on field conditions and/or sampling results. Changes to sampling specifications will be considered in consultation with the regulatory agencies.

**Table 1
Sampling and Analysis Summary**

Category	Total
Number of Sampling Locations	12
Number of Samples	20
Number of Radionuclide Analyses	20
Number of Metal Analyses	20
Number of VOC Analyses	12
Number of PCB Analyses	18

78

4.0 REFERENCES

DOE, 1992, Phase I RFI/RI Work Plan Operable Unit 8 700 Area, Rocky Flats Environmental Technology Site, Golden, Colorado, December.

DOE, 1992-2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 1995, Operable Unit 8 Data Summary Report, Rocky Mountain Remediation Services, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

Table 2
Sampling Specifications for IHSS Group 700-5

IHSS Group	IHSS/PAC/ UBC Site	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method		
700-5	UBC 770	CF49-021	2083927.384	751220.084	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec		
							Metals	6200	6010		
								VOCs	8260	8260	
		CF49-022	2083931.668	751255.828	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec		
								Metals	6200	6010	
								VOCs	8260	8260	
		CG49-008	2083960.481	751234.246	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec		
								Metals	6200	6010	
								VOCs	8260	8260	
								PCBs	N/A	8082	
		CG49-009	2083971.873	751259.396	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec		
								Metals	6200	6010	
								VOCs	8260	8260	
								PCBs	N/A	8082	
		CG49-010	2083955.814	751267.208	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec		
								Metals	6200	6010	
								PCBs	N/A	8082	
							Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
								Metals	6200	6010	
								VOCs	8260	8260	
						PCBs	N/A	8082			
CG49-011	2083982.724	751254.188	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec				
						Metals	6200	6010			
						PCBs	N/A	8082			
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec		
						Metals	6200	6010			
						VOCs	8260	8260			

IHSS Group	IHSS/PAC/ UBC Site	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method
		CG49-012	2083982.724	751213.389	Surface Soil	0 - 0.5'	PCBs	N/A	8082
							Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
					Subsurface Soil	0.5 - 2.5	PCBs	N/A	8082
							Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082
		CG49-013	2083982.152	751238.381	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							PCBs	N/A	8082
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082
		CG49-014	2083992.996	751211.269	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							PCBs	N/A	8082
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082
		CG49-015	2084001.299	751211.947	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							PCBs	N/A	8082
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Depth Interval	Analyte	On-Site Laboratory Method	Off-Site Laboratory Method
		CG49-016	2084035.020	751220.081	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							PCBs	N/A	8082
							SVOCs	N/A	8270
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082
							SVOCs	N/A	8270
		CG49-017	2084019.939	751220.758	Surface Soil	0 - 0.5'	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							PCBs	N/A	8082
							SVOCs	N/A	8270
					Subsurface Soil	0.5 - 2.5	Radionuclides	HPGe	Alpha Spec
							Metals	6200	6010
							VOCs	8260	8260
							PCBs	N/A	8082
							SVOCs	N/A	8270

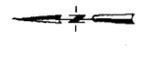
Figure 1
IHSS Group 700-5

EXPLANATION

IHSS Groupings

- 700-5
- Standard Map Features
 - Buildings and other structures
 - Demolished buildings and Other Structures
 - Lakes and ponds
 - Streams, ditches, or other drainage features
 - Fences and other barriers
 - Paved roads
 - Dirt roads
 - Solar Evaporation Ponds (SEPs)
 - Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:
 PACS
 Historical Review Report (HRR)
 Site Visit Report
 Ser. 30, 1997
 Individual Hazardous Substance Site (IHSS)
 DOE 1992, HRR Report and Subsequent Updates
 Buildings, terrain, hydrography, roads and other features captured by ERG/RSL, Las Vegas.
 Digitized from the orthophotographs, 1995



State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD27

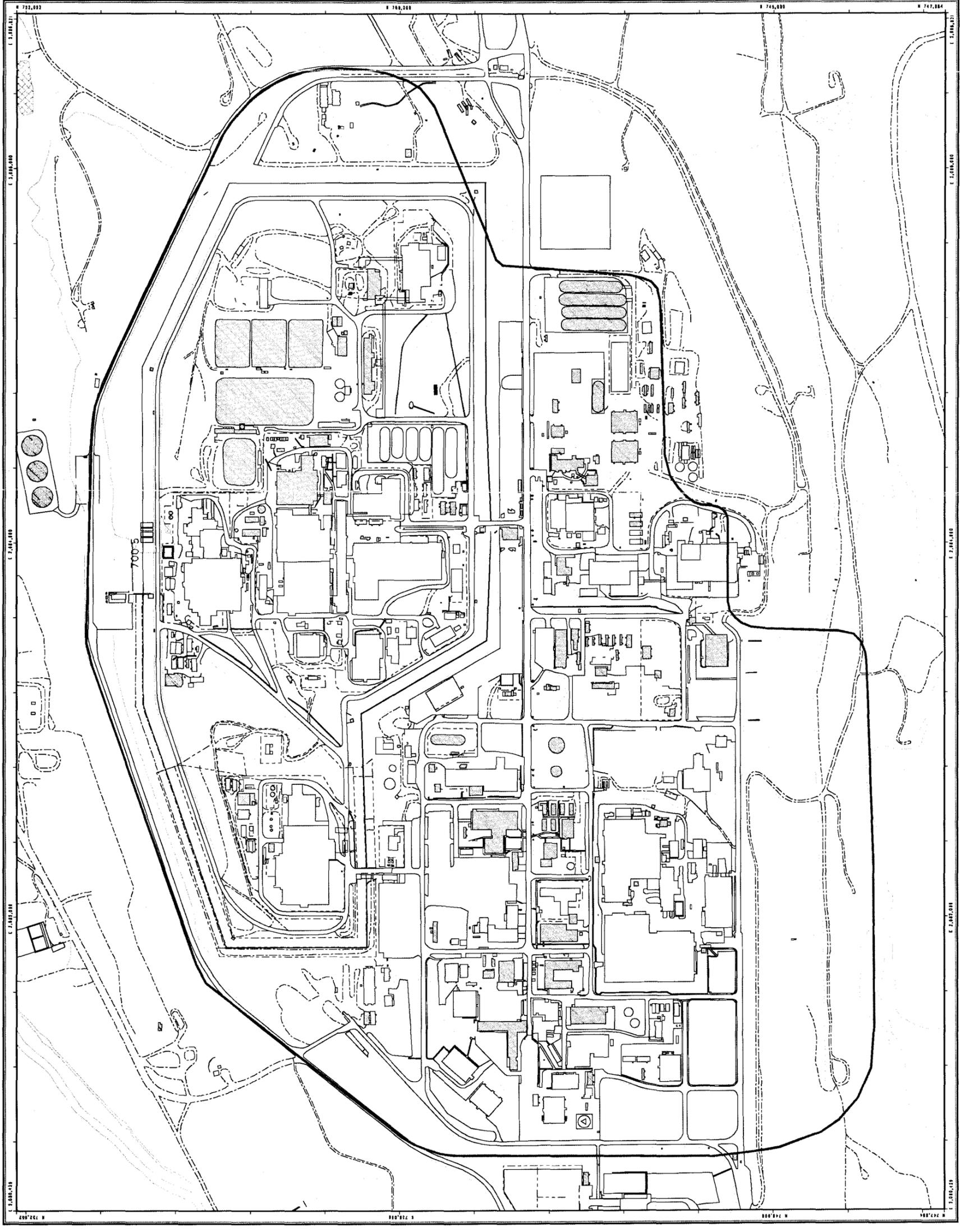
U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by:
 G16 Dept. 303-366-7707



CH2MHILL
 CONSULTANTS

September 11, 2003



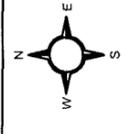
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Figure 2
IHSS Group 700-5
Existing Soil Sample Data Above
Background Means Plus 2 Standard
Deviations or Detection Limits

KEY

- Surface Soil Location with an Action Level Exceedance
- Surface Soil Location with No Exceedances
- Subsurface Soil Location with an Action Level Exceedance
- Subsurface Soil Location with No Exceedances

- ▭ UBC 770
- ▭ IHSS
- ▭ PAC
- ▭ Building
- ▭ OPWL
- ▭ Foundation Drain
- ▭ Storm Sewer
- ▭ Sanitary Sewer
- ▭ Stream
- ▭ Fence
- ▭ Paved Road



Scale = 1:650

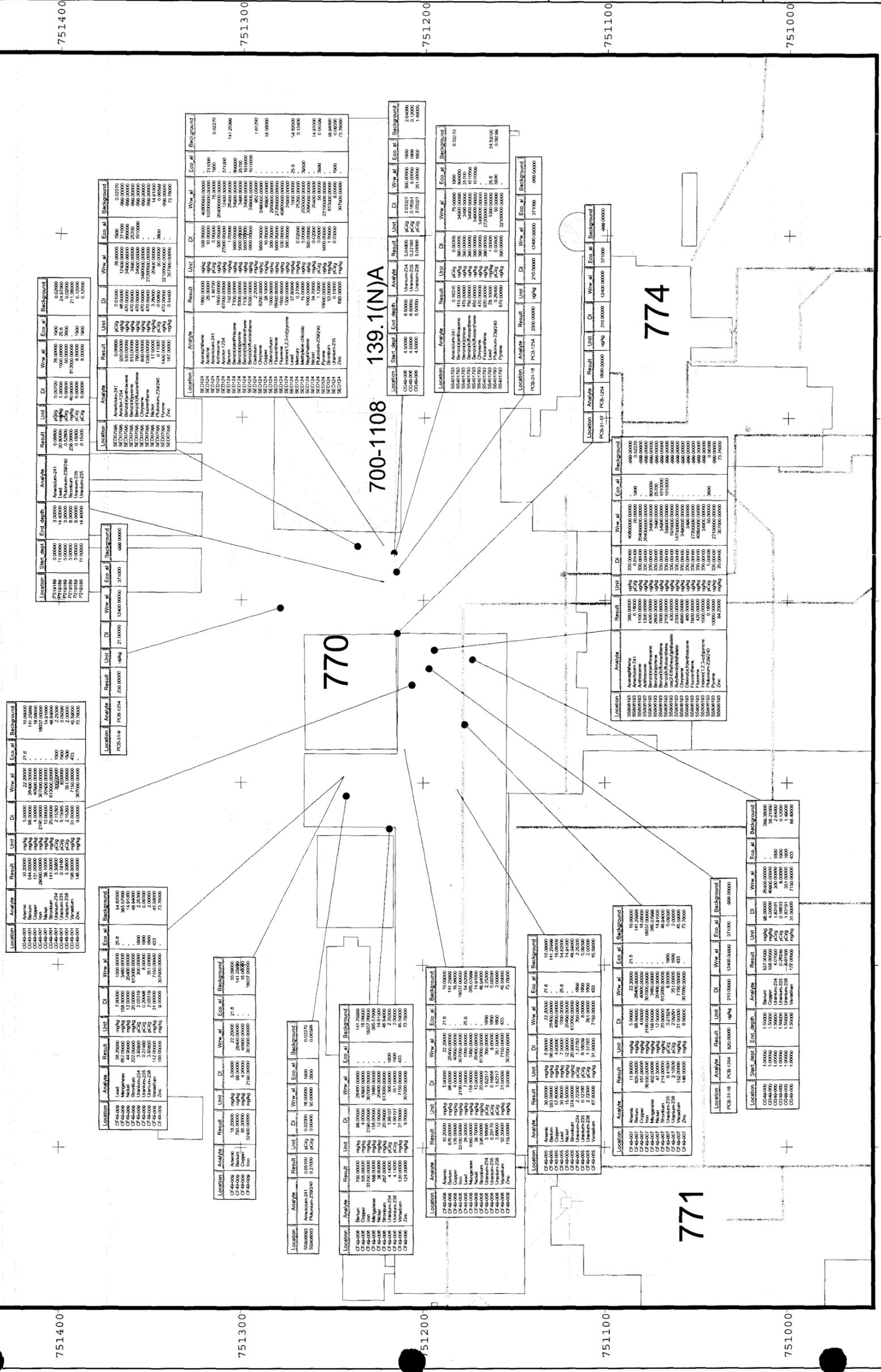
State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
CF-84-001	Arsenic	10.20000	mg/kg	5.00000	22.20000	21.6	10.00000
CF-84-001	Barium	54.00000	mg/kg	48.00000	2900.00000		141.25000
CF-84-001	Iron	2600.00000	mg/kg	2100.00000	30700.00000		1807.00000
CF-84-001	Mercury	0.00000	mg/kg	0.00000	0.00000		0.00000
CF-84-001	Strontium	11.00000	mg/kg	21.00000	67000.00000		44.40000
CF-84-001	Vanadium	5.30000	mg/kg	2.15000	380.00000	1500	2.35000
CF-84-001	Uranium-234	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-001	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-001	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-001	Plutonium-239	0.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-001	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
CF-84-006	Arsenic	15.00000	mg/kg	5.00000	22.20000	21.6	10.00000
CF-84-006	Barium	70.00000	mg/kg	68.00000	2900.00000		141.25000
CF-84-006	Iron	3300.00000	mg/kg	2100.00000	30700.00000		1807.00000
CF-84-006	Mercury	0.00000	mg/kg	0.00000	0.00000		0.00000
CF-84-006	Strontium	11.00000	mg/kg	21.00000	67000.00000		44.40000
CF-84-006	Vanadium	5.30000	mg/kg	2.15000	380.00000	1500	2.35000
CF-84-006	Uranium-234	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Plutonium-239	0.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
CF-84-006	Arsenic	15.00000	mg/kg	5.00000	22.20000	21.6	10.00000
CF-84-006	Barium	70.00000	mg/kg	68.00000	2900.00000		141.25000
CF-84-006	Iron	3300.00000	mg/kg	2100.00000	30700.00000		1807.00000
CF-84-006	Mercury	0.00000	mg/kg	0.00000	0.00000		0.00000
CF-84-006	Strontium	11.00000	mg/kg	21.00000	67000.00000		44.40000
CF-84-006	Vanadium	5.30000	mg/kg	2.15000	380.00000	1500	2.35000
CF-84-006	Uranium-234	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Plutonium-239	0.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
CF-84-006	Arsenic	15.00000	mg/kg	5.00000	22.20000	21.6	10.00000
CF-84-006	Barium	70.00000	mg/kg	68.00000	2900.00000		141.25000
CF-84-006	Iron	3300.00000	mg/kg	2100.00000	30700.00000		1807.00000
CF-84-006	Mercury	0.00000	mg/kg	0.00000	0.00000		0.00000
CF-84-006	Strontium	11.00000	mg/kg	21.00000	67000.00000		44.40000
CF-84-006	Vanadium	5.30000	mg/kg	2.15000	380.00000	1500	2.35000
CF-84-006	Uranium-234	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Plutonium-239	0.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

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CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
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CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Plutonium-239	0.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

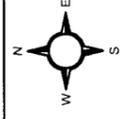
Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
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CF-84-006	Uranium-235	3.00000	pCi/g	0.00000	0.00000		0.00000
CF-84-006	Uranium-238	3.00000	pCi/g	0.00000	0.00000		0.00000
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CF-84-006	Zinc	140.00000	mg/kg	9.00000	30700.00000	43	75.00000

Location	Analyte	Result	Unit	DI	Ww. al.	Eco. al.	Background
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CF							

Figure 3
FY2004 Sampling Locations
for IA Group 700-5
(UBC 770)

- KEY**
- Statistical Sampling Location
 - Biased Sampling Location
 - ▭ UBC 770
 - ▭ IHSS
 - ▭ PAC
 - ▭ Building
 - ▭ Original Process Waste Line
 - ▭ Foundation Drain
 - ▭ Storm Sewer
 - ▭ Sanitary Sewer
 - ▭ Streams
 - ▭ Surface Water Route
 - ▭ Fence
 - ▭ Paved Road



Scale = 1:250

State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:

